DURHAM
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CITY OF MEDICINE

CITY OF DURHAM | NORTH CAROLINA

Date: **October 6, 2015**

To: **Thomas J. Bonfield, City Manager**
Through: **W. Bowman Ferguson, Deputy City Manager**
From: **Donald F. Greeley, Director, Water Management**

Subject: **Contract Award to CDM-Smith, Inc. for Professional Engineering Services for Sanitary Sewer Flow Monitoring and Inflow/Infiltration (I/I) Reduction Evaluation**

Executive Summary

In December 2014, the Department of Water Management (DWM) issued a Request for Qualifications (RFQ) for Professional Engineering Services related to sanitary sewer flow monitoring and evaluation. The project will further identify specific areas in the City's sewer sub-basins that experience high levels of inflow/infiltration (I/I); i.e., non-sanitary-sewer water that enters the sanitary sewer collection system.

The end result of the project will be recommendations for infrastructure repairs, replacements, and/or rehabilitation. The I/I approach "drills down" from the City's existing flow monitoring program, and stands to be a long-term strategy that supplements other methods used to identify infrastructure improvements, such as CCTV and sewer modeling.

This contract will work in phases that start with evaluating existing flow monitoring data; installing new, temporary flow monitors in the manholes of select areas indicative of high I/I; monitoring 3 to 4 months of sewer flow and rainfall collected in 15-minute intervals; evaluating data; then making recommendations for further study, like smoke testing, and/or near-immediate rehabilitation. The project will move from one study area to another. Initial areas of evaluation include sewer systems along the Eno River, Lick Creek, and Third Fork Creek. The initial phase, in broad areas that are known to have I/I issues, will cover approximately 17% of our entire system.

CDM Smith, Inc., was selected by City staff to perform the evaluation and provide recommendations as to needed improvements. A Scope of Services and associated fee for this study has been negotiated in the amount of $695,700.00.

Recommendation

The Department of Water Management recommends that the City Council:

1. Authorize the City Manager to execute a contract with CDM Smith, Inc. for engineering services in the total amount not to exceed $695,700.00; and
2. Establish a contingency fund for the contract of $69,300.00; and
3. Authorize the City Manager to negotiate change orders for the contract provided that the cost of all change orders and the total project cost do not exceed $765,000.00.

Background
The Department of Water Management is responsible for operation, maintenance, evaluation, rehabilitation, and improvement of the sewage collection system throughout the City of Durham. As part of the Department's ongoing efforts, identifying and making necessary improvements to the sewer system is often needed.

The proposed project will focus temporary flow monitoring at locations throughout the collection system and sewer evaluation surveys, such as smoke testing, MH inspection and closed-circuit television (CCTV) in order to locate and quantify sources of inflow/infiltration entering the system. Inflow/Infiltration (I/I) can be a major cause of sanitary sewer overflows; lead to premature deterioration of equipment, controls and piping at lift stations and WRFs, and increases costs related to power and chemical use.

I/I is non-sanitary sewer water that enters the sanitary sewer collection system. I/I reduces capacity in pipes, lift stations, and WRFs, and also causes sanitary sewer overflows. Inflow is the water which enters a system through direct and specific sites, normally at or near ground level. Sources of inflow include roof leaders, manholes located in low-lying areas that may become submerged, offset manhole frames and indirect connections to storm pipes and basins. Infiltration is characterized more by indirect/nonspecific sites, normally below ground. Examples of this include broken sewer pipes, open joints in pipe and manholes and poor connections between mainline pipe and house service pipes. Infiltration is often much harder to identify and eliminate.

For many years the City has operated flow monitors at key locations throughout Durham. The data collected has been used to focus maintenance and repair operations in general areas, but in order to more closely identify I/I locations, specific sub-monitoring is vital. The current monitors cover very large areas and much smaller areas are needed for this project. Generally, though, monitors in these sub-areas need only be in place for a short period of time, normally 90-120 days. Once enough data is collected, the monitors can be re-located to focus on additional areas.

Once data is collected and analyzed, a ranking of the areas is done to identify the worst-offending areas of I/I. Focus can then turn to intense flow monitoring and analysis to identify and quantify various strategies to make repairs, add pipelines or replace or expand lift stations. The deliverables will recommend techniques and cost estimates to correct structural, hydraulic, operational and maintenance deficiencies. The City can then turn these repairs over to a contractor already engaged or bundle various repairs and issue a repair contract for bid. This program of work will have multiple phases.

Issues and Analysis
In order to select a consultant to perform these services, a RFP was prepared and advertised. The city received responses from the following six firms:

McKim & Creed
CDM Smith, Inc.
Chester Engineering
Freese and Nichols
Hazen and Sawyer
Hydrostructures

The selection panel for this project had members from the Equal Opportunity/Equity Assurance Department and the Department of Water Management. The 5-member panel selected CDM Smith, Inc. as the most qualified to perform this work. A Scope of Services was negotiated and is attached.

Alternatives
Alternative #1 – Do not move forward with the project. This alternative may lead to poor operations in the local sewer system, perhaps leading to blockages and sewer overflows. This in turn may lead to the City receiving fines and violation notices from NC Department of Water Quality.

Financial Impact
The cost to the City for the contract with CDM Smith, Inc. is $765,000.00. The funds are currently available in 4100P002-731004-P28AI.

SDBE Summary
The Equal Opportunity/Equity Assurance Department reviewed the proposal submitted by CDM Smith, Inc. of Raleigh, North Carolina to determine compliance with the Ordinance to Promote Equal Business Opportunities in City Contracting. It was determined that CDM Smith, Inc. is in compliance with the Ordinance to Promote Equal Business Opportunities in City Contracting.

SDBE REQUIREMENTS

There are no M/SDBE or W/SDBE goals.

WORKFORCE STATISTICS

Workforce statistics for CDM Smith, Inc. are as follows:
(Consolidated)

Total Workforce	3647	
Total Females	1169	(32%)
Total Males	2478	(68%)
Black Males	73	(2%)
White Males	2040	(56%)
Other Males	365	(10%)
Black Females	64	(2%)
White Females	963	(26%)
Other Females	142	(4%)

Attachments: Scope of Services
Contract